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10/681,080	10/08/2003	Vilho Nissinen	3397-94PDIV	6252

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EXAMINER

CORDRAY, DENNIS R

ART UNIT	PAPER NUMBER
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1731

DATE MAILED: 10/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/681,080	Applicant(s) NISSINEN ET AL.	
	Examiner Dennis Cordray	Art Unit 1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 60-85, 88, 89, 91, 94-105, 107 and 108 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 60-70, 74-81, 88, 89, 91, 94, 97-103, 107 and 108 is/are rejected.
- 7) ☒ Claim(s) 71-73, 82-85, 95, 96, 104-105 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's amendments to the Specification and Claims have overcome the objections to the drawings and to Claims 66, 69-70, 86-87, 90, 92-93 and 106.

Therefore, the objections have been withdrawn. The Drawings are accepted.

Applicant's amendments to the claims have also overcome the rejections of claims 71-72, 74-76, 78, 81 and 104 under 35 U.S.C. 112, second paragraph.

2. Applicant's arguments with respect to the rejections of Claims 74-77 and 97-99 under 35 U.S.C. 112, first paragraph have been fully considered but they are not persuasive. Applicant argues that the Specification provides adequate support for the claims to one of ordinary skill in the art and references p 13, lines 7-14 and p 11, lines 22-24 as providing the required support. The Specification recites on p 13, lines 7-14 that the surface charge states of the paper web may be altered by the claimed treatments. There is no indication in the Specification as to voltages or currents applied to affect the radiation treatments. There is no indication in the Specification of the amount of alum or polymer applied to the web, or how it is applied, or even the nature of the polymer (i.e.- cationic, ionic, amphoteric, charge density, monomers used, molecular weight, etc). The only reference to the nature of the polymer that might be used is given on p 15, 1st paragraph, which recites, "The coat application step may be complemented with binding agents, polymers, advantageously resins, latexes or natural binding agents that enhance the forces adhering the coating material particles to the paper web and bind the particles to each other." The teaching on p 15 appears to indicate that the

Art Unit: 1731

polymer is used as a complementary binder, which use is prohibited by the independent claims.

The Specification recites on p 11, lines 22-24 that the adherence of the coating is enhanced by means of electromagnetic radiation and further explains in line 25 that the radiation emitter is denoted by reference numeral 20 in Figure 4. The radiation emitter denoted by reference numeral 20 designates a treatment following application of the pigment treating step, not prior to the application as Claims 74 and 97 recite.

The rejection of Claims 74-77 and 97-99 under 35 U.S.C. 112, first paragraph is maintained.

3. Applicant's amendments to the claims have overcome the rejections of claims under 35 U.S.C. 102(b) and 35 U.S.C. 103(a). Therefore, the rejections have been withdrawn. However, upon further consideration, new grounds of rejection are made as detailed below.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 66 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled

Art Unit: 1731

in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 66, as amended, recites flocced particles having an average size not larger than 100 nm. The Specification as originally filed recites in the paragraph bridging pages 4 to 5 that the that the precipitated PCC has a particle size smaller than 100 nm (bottom of p 4) and that the prepared elementary particles floc into particles smaller than 500 nm (top of p 5). Thus the Specification fails to teach that the flocced particles are smaller than 100 nm.

5. Claims 74-77 and 97-99 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 74 and 97 recite treating the web with alum or a polymer. Claims 75 and 97 recite treating the web with an electrolytic or corona discharge treatment. Claims 76 and 98 recite an electromagnetic radiation treatment to the web. The Specification provides insufficient indication of how or to what extent such treatments are applied to enable one skilled in the art to perform the claimed treatments.

Claims 77 and 99 are dependent on Claims 76 and 98 and thus inherits the lack of enablement.

Art Unit: 1731

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 88-89, 91, 94-105 and 107-108 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 88 recites the limitation "the elementary pigment particles", apparently in reference to an earlier portion of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 94 depends from cancelled claim 92.

Claims 89, 94-105 and 107-108 ultimately depend from and thus inherit the indefiniteness of Claim 88.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 60-66, 74, 78, 81, 88-89, 91, 94, 97, 100, and 103 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ilmasti et al (WO 98/11999) in view of Kondo et al (5320897) and further in view of Haylock ("Paper, Its making, merchenting and

Art Unit: 1731

usage", 3rd ed, The National Association of Paper Merchants, London, 1974, pp 60-61, 102-103, 116-118).

Ilmasti et al discloses a method of transferring material additives to the surface of a moving web, for instance paper, wherein the web is manufactured by a conventional continuous web formation process (p 1, lines 4-9). Application of dust or sprayable materials is disclosed (p 2, lines 10-11).

Ilmasti et al discloses a method of addition wherein the web passes through a housing wherein the additional material is transferred to the web by ion blasting provided by a high voltage potential between high voltage electrodes above the web (second electric potential) and a plate electrode (first electric potential) below the web (p 2, lines 5-15; p 3, lines 1-12). The web moves across the lower plate electrode and is thus brought to a first electric potential by virtue of moving to the plate. The method transfers material quickly and evenly to the surface of the moving web (p 2, lines 1-3) and results in decreased water usage and therefore decreased need for drying (p 2, lines 25-28).

Ilmasti et al does not disclose the following:

- a pigment or calcium carbonate for the material additive
- the particle size of the additive
- formation of the web from fibers
- mechanical treatment of the web
- calendering after the treatment

Kondo et al discloses that paper comprising a coating applied to the paper that contains calcium carbonate pigment of a particle size from 0.5 to 15 μm (500 to 15000 nm), which overlaps one end of the claimed size range, and a polymeric binder (Abstract; col 7, lines 63-67; col 8, lines 38-47; col 8, line 61 to col 9, line 6). The calcium carbonate provides excellent ink receptivity (col 8, lines 61-65). The paper also comprises single precipitated calcium carbonate particles having diameters of about 0.1 to 0.3 μm (about 100-300 nm) or clusters of particles having a diameter in the range of 0.5 to 20 μm (500-20000 nm) to provide a paper free from feathering and strikethrough (Abstract; col 4, lines 29-55). Any papermaking process, including a standard papermaking machine, can be used to form the paper, thus formation of a web from fibers is inherent (col 7, lines 49-58). Particles in the size range of 100 nm are subject to van der Waals binding forces (if evidence is needed, see Virtanen (WO 97/32934), p 7, lines 17-23). The coated paper is smoothed by passage through a pressure nip comprising a heated metal roll and a heated or non-heated elastic roll (calendered) (col 9, lines 60-68). Examples of paper are given wherein the papermaking furnish comprises alum and cationic polymers (col 11, lines 42-51).

Haylock teaches a typical papermaking process comprising spreading onto a moving web-formation substrate (wire) fibrous raw material (p 69, (A) The wet end, item 1). The material is further treated by pressure rolls (mechanical treatment) (item 4). Finishing steps include calendering using one or more heated rolls to achieve a smooth finish (p 102-103, Calendering). Coating is a typical finishing step as well used to apply pigments and polymeric adhesives (p 116, Coating). Calendering is a step following

Art Unit: 1731

coating that provides the best finishes (p 118, 3rd par). Some of the calendar rolls can be heated (p 103, first half of page). Fillers and pigments can be added to the pulp (p 60, Loadings or Fillers to p 61, Sizing Agents). Formation of a nonwoven web from cellulosic fibers, plant fibers, glass fibers or other fibers is a well known (p 13, last par).

The art of Ilmasti et al, Kondo et al, Haylock and the instant invention are analogous as pertaining to papermaking and the use of pigments in papermaking. It would have been obvious to one of ordinary skill in the art to 1) use a standard papermaking process including formation with cellulosic, plant or other suitable fibers, mechanical treatment before coating, calendaring with one or more heated rolls after the coating treatment; and 2) to use calcium carbonate with the claimed particle size as a coating for the paper of Ilmasti et al in view of Kondo et al and further in view of Haylock to produce a smooth paper with good ink receptivity and free from feathering and strikethrough. It would also have been obvious to use conventional retention aids, such as alum and polymers, in the paper.

8. Claims 67-70 and 107-108 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ilmasti et al in view of Kondo et al and further in view of Haylock, as discussed above, and further in view of Virtanen (WO 96/23728), Virtanen (WO 97/32934) and Andersen et al (WO 95/18885).

Ilmasti et al, Kondo et al and Haylock do not disclose the preparation of calcium carbonate particles.

Virtanen (WO 96/23728) discloses a process for preparing precipitated calcium carbonate clusters wherein the size of the clusters is regulated to between 0.2-0.4 μm (200-400 nm) by applying turbulence (Abstract; p 6, lines 105). Virtanen (WO 97/32934) discloses a process for preparing precipitated calcium carbonate clusters wherein the size of the clusters is regulated by adjusting the pH of an aqueous dispersion of calcium carbonate (Abstract; p 7, lines 1-5). Particles as small as 30-60 nm are produced and attach to a substrate by van der Waals forces (p 9, lines 8-15). Andersen et al (WO 95/18885) discloses recovery of calcium carbonate from sludge that is a by-product of the manufacture of recycled paper (sludge from a deinking process, for instance) comprising calcining the mineral precipitate into lime, reacting the lime with water and reacting the calcium hydroxide with carbon dioxide (Abstract; p 7, lines 25-29).

The art of Ilmasti et al, Kondo et al, Haylock, Virtanen (WO 96/23728), Virtanen (WO 97/32934), Andersen et al and the instant invention are analogous as pertaining to pigments and calcium carbonate used in papermaking. It would have been obvious to one of ordinary skill in the art to regulate size of the precipitated calcium carbonate clusters using turbulence or pH, and to use recycled calcium carbonate processed from a waste sludge, such as a deinking sludge, in the coating for the paper of Ilmasti et al in view of Kondo et al and further in view of Haylock, Virtanen (WO 96/23728), Virtanen (WO 97/32934) and Andersen et al as functionally equivalent options and to make use of inexpensive raw materials.

Art Unit: 1731

9. Claims 75, 79, 80, 97 and 101-102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ilmasti et al in view of Kondo et al and further in view of Haylock, as discussed above, and Yagi et al (4944959).

Ilmasti et al, Kondo et al and Haylock do not disclose treating the web with an electrolytic or corona discharge or by brushing to establish a static charge. Ilmasti does disclose that conventional methods of addition include changing the electrical properties of the surface (p 1, lines 14-16).

Yagi et al discloses applying a charge to a substrate using a corona discharge or frictional contact (col 4, lines 55-62). The frictional contact can comprise rubbing the surface with an appropriate material to impart a positive or negative charge as desired to the surface (col 5, lines 8-65). The electrostatic recording process wherein toner particles adhere to a charged surface is well-known.

The art of Ilmasti et al, Kondo et al, Haylock, Yagi et al and the instant invention are analogous as pertaining to pigments and calcium carbonate used in papermaking. It would have been obvious to one of ordinary skill in the art to use a static charge generator, such as an electrolytic or corona discharge or by frictional brushing, to pretreat the paper of Ilmasti et al in view of Kondo et al and further in view of Haylock and Yagi et al as functionally equivalent options to better attract and hold the pigment particles. Brushing would inherently lift the microfibrils from the surface as well as provide a static charge.

Allowable Subject Matter

10. Claims 71-73, 82-85, 95-96 and 104-105 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The large body of prior art teaches formation of precipitated calcium carbonate prior to formation of the web, either in a separate process, after which the product is conveyed to the web, or in an aqueous slurry of fibers with reactants of calcium oxide, calcium hydroxide and carbon dioxide. In the methods disclosed, there is no indication of causing the reaction to occur on the formed web.

Prior art also does not teach calendaring of the web while calcium carbonate is still in an amorphous form.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

Art Unit: 1731

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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